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Dwelling on Earth

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PER UNA ARCHITETTURA DELLA RESPONSABILITÀ | FOR AN ARCHITECTURE OF RESPONSIBILITY

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PAOLO PORTOGHESI

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Con il numero 37 la rivista "Abitare la Terra", a quattordici anni dalla sua nascita, cambia il suo formato, ma non il suo obiettivo: la tutela dell'ambiente e la promozione di una architettura, che abbandonata la tendenza all'esaltazione individualistica delle grandi personalità creative, che ha condizionato la produzione architettonica degli ultimi decenni, torni ad essere una disciplina rigorosa, che ha per obiettivo il miglioramento della vita di tutti gli esseri viventi e per questo non rinuncia a utilizzare i frutti di una esperienza secolare che coinvolge le diverse civiltà umane.
Il termine Geo-architettura, che si legge nella testata, è stato coniato da Le Corbusier, nel 1942 per la sua riflessione su *Les trois établissements humains* e allude a una architettura che abbracci tutto ciò che l'uomo ha costruito sulla superficie terrestre.
Per noi oggi Geo-architettura vuol dire una architettura umile, che, sia arte senza per questo ammantarsi della superbia del nuovo fine a sé stesso, che si faccia carico della necessità di proteggere l'ambiente, di ridurre i processi di inquinamento, di combattere la disuguaglianza tra i popoli, di ridurre i processi che attraverso i cambiamenti climatici rischiano di distruggere gli equilibri del pianeta e il suo paesaggio. Per fondare la Geo-architettura è necessario a nostro parere: imparare dalla natura e dalla storia, rispettare l'identità dei luoghi, recuperare la "coralità" degli spazi urbani, abbattere gli sprechi di risorse non rinnovabili e di tempo umano, contrapporre a uno sviluppo senza limiti, che presuppone una impossibile "crescita infinita", una crescita spirituale di cui si avvertono i primi sintomi anche nella architettura.

Fourteen years after *Abitare la Terra* was published for the first time we have decided to change its format, but not its goal: to protect the environment and promote architecture. No longer an architecture that has abandoned its tendency to praise and exalt larger-than-life creative individuals and the architectural works that have influenced recent decades, but an architecture that is once again a meticulous discipline focusing on improving the lives of all living creatures; an architecture that exploits the 'fruits' of its centuries-old history and many different civilisations.
The term Geo-architecture at the top of the front cover of this issue number was coined by Le Corbusier in 1942 when he wrote *Les trios établissements humains;* the term refers to an architecture that embraces everything man has built on the earth's surface. For us, Geo-architecture means humble architecture, an architecture that is art without necessarily the arrogance of being an end unto itself; an architecture that assumes the responsibility of protecting the environment, reducing pollution, fighting inequality between peoples, reducing the processes of climate change that may destroy the balance that exists here on earth and its landscapes. We believe that to create Geo-architecture we need to: learn from nature and history; respect the identity of places; reinstate the "choral nature" of urban spaces; drastically reduce the way we waste non-renewable resources and human time; and replace unlimited growth (involving impossible "endless growth") with spiritual growth, the seeds of which are now beginning to grow in architecture.

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Quaderni

sommariosummary

I Quaderni di Abitare la Terra sono a cura di Carmine Gambardella

IN COPERTINA / FRONT COVER
Lazaretto of Nisida, gauche, particular, mid 1800s, Museum of San Martino in Naples

Inclusive Design for Urban Innovation

Designing for an inclusive, sustainable and human-centred city

Francesca Tosi[1], Alessandra Rinaldi[1], Alessia Brischetto[1]

[1] *Laboratory of Ergonomics & Design, Department of Architecture, University of Florence, Florence, Italy*

Abstract

The richness of a region and its urban framework depend on the potential of innovation of own spaces, intrinsic ability of building up network and optimizing resources properly. The idea of *accessibility* is changing, and it has to be intended as the set of all factors able to generate well-being, promote independent mobility, guarantee safety and support socialization and collaboration among people. Under this new vision of accessibility, the approach of inclusive design may be conceived a valid and reliable operating tool, as it is based on the assessment of actual and potential needs of people, thus allowing to address designing issues that are needed for developing inclusive urban environments.

In the present article, we present the preliminary results achieved during a research project carried out at the Laboratory of Ergonomics for Design of Florence University. The project aimed at investigating innovative solutions and at defining guidelines aimed at the objectives listed hereafter:

– To develop a city "on a human scale", inclusive and accessible for all, even to the weakest people (disabled, elderly and children). A city oriented to prefer solutions that support sustainability, usability and ergonomics, intended as a user-system (or user-product) interaction both of architectural-urban structures and services.
– To create services dedicated to physical activity and sport (fitness trails, wellness providers) in order to make each user, including those most vulnerable (namely disabled and elderly people), more sensitive toward a dynamic and active lifestyle as long as possible.
– To investigate the possibility for including services connected to the urban-environment intelligence, able to collect information about the city and its citizens in real time, and to improve safety and social-policies based on citizens behaviors and needs.

Keywords: inclusive design, urban innovation, social innovation, service design

1. Introduction

The wealth of a territory and its urban context depends on the innovation potential of its spaces and on its intrinsic capacity to build networks and exploit resources. Today, this model of innovation, in addition to producing social, cultural and economic growth, is closely related to the opportunity to generate social inclusion.

It is also shown that the urban built environment has a strong impact on the health of citizens, and it depend on its potential to promote socialization, active aging and independent living of the inhabitants, including even the most fragile categories.

There are studies in the literature that show evidence of how the built environment affects public health and in particular chronic diseases [1,2] as it affects healthy lifestyles (physical activity, healthy diet, positive social interactions).

The development of human-sized and inclusive urban contexts therefore requires a restructuring of the principle of accessibility itself, which, moving from a purely physical connotation to a more social one, takes on broader meanings. the concept of accessibility has evolved and is now understood as the set of all the factors that are able to generate well-being, encourage and encourage mobility independently, ensure security and promote socialization and collaboration between people [3-4].

The accessibility requirement, introduced at a regulatory level in the field of building structures and immediate appliances, has been better specified in Presidential Decree 503/96, with regard to urban spaces. At the moment, however, there is no detailed or unambiguous definition of the concept of **urban accessibility**.

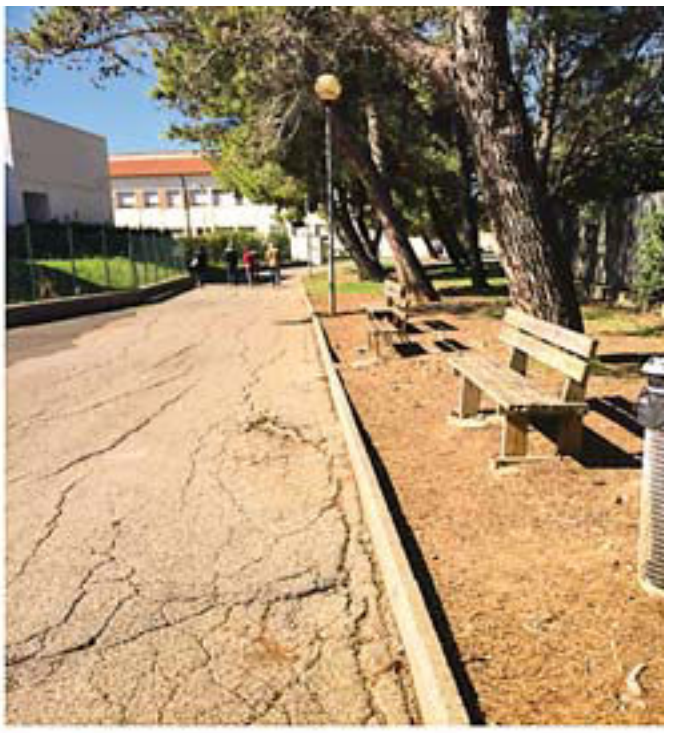
However, urban accessibility means the set of spatial, distributive and organizational-managerial characteristics of the built environment, which are able to allow the easy enjoyment, in conditions of adequate safety and autonomy, of the places and equipment of the city, even by people with reduced or impeded mobility, sensory and / or psycho-cognitive skills.

The built environment must be designed to encourage healthy living for all: open spaces where children can play, green spaces where people can relax and paths where even the elderly can walk or practice physical activity. it is necessary to develop services within walking distance of residential areas, favoring daily physical activity and socialization.

Aimed at these objectives, therefore, Urban Ergonomics intends to apply the principles and evaluation methods of traditional Ergonomics, and of Human-Centred Design (HCD) and User Experience (UX) approches, to the evaluation and design of the urban environment and its elements (street furniture, equipment, systems and their components) and services (environmental, social and relational) that characterize it.

Specifically, the Ergonomics for Design and the Human-Centred Design approach, applied to the urban environment, allow the evaluation and design of solutions aimed at ensuring:

– full compatibility of spaces, equipment, furnishings and urban services, and their components, with the physical, perceptual and cognitive characteristics of the greatest percentile of users;



– conditions of safety, usability and well-being offered by the urban environment and its components and services.

In this direction, the work presents the results of the research project: Guidelines for social inclusion, sustainability and usability of cultural and sporting activities, for the Urban Innovation Program presented by the Municipality of Cecina (DR n. 3197 of 10.07.2015 Tuscany Region) "developed within the Laboratory of Ergonomics & Design of the University of Florence in collaboration with EPSUS[1].

2. Background and research objectives

The research project concerned the Scholastic Village of the Municipality of Cecina (PI) and was part of a larger project of the Municipality for the environmental recovery and the redevelopment of public spaces, with the following objectives: i) redevelop the services existing sports, providing for the increase of sports and leisure facilities and the creation of an area equipped for recreational activities; ii) redevelop the green areas of the urban park with interventions on vegetation and furnishings; iii) improve the system of pedestrian connections and connections between the various parts of the area; iv) redevelop the theatrical structure and create an area equipped for outdoor library.

This area was originally characterized by pedestrian paths, used by students and other users to access school facilities, and by paved paths, used to access indoor sports facilities, without any attention to the usability of the spaces and the orientation towards a wider user base.

Based on the initial state of the art of the school village, the research work was aimed at defining practical solutions and guidelines, for orienting the redesign of an equipped public area of about 10,000 square meters, and the realization, specifically, of:

– an area for outdoor sports and leisure facilities;
– a play area for children with various age groups;
– accessible street furniture.

In general, the macro-objectives of the research were:

– to increase the comfort of the urban space for all citizens, eliminating or reducing obstacles, architectural barriers, sources of danger and situations of fatigue or discomfort, the latter within the city, may be, for example, walking excessive distances, or having to stand

for a certain period of time at bus stops;
– to increase the quality of life in urban spaces, understood as the relationship between the aims to be pursued and the quantity of psycho-physical energies that are necessary to achieve them;
– to make more tangible the concept of equality understood as the achievement of equal opportunities of choices, regardless of the specific conditions of disadvantage of individuals;
– to increase the possibilities of individual options, through the strengthening of personal autonomy;
– to aim at a more correct and intelligent use of the psycho-physical energies of man, also understood as a resource.

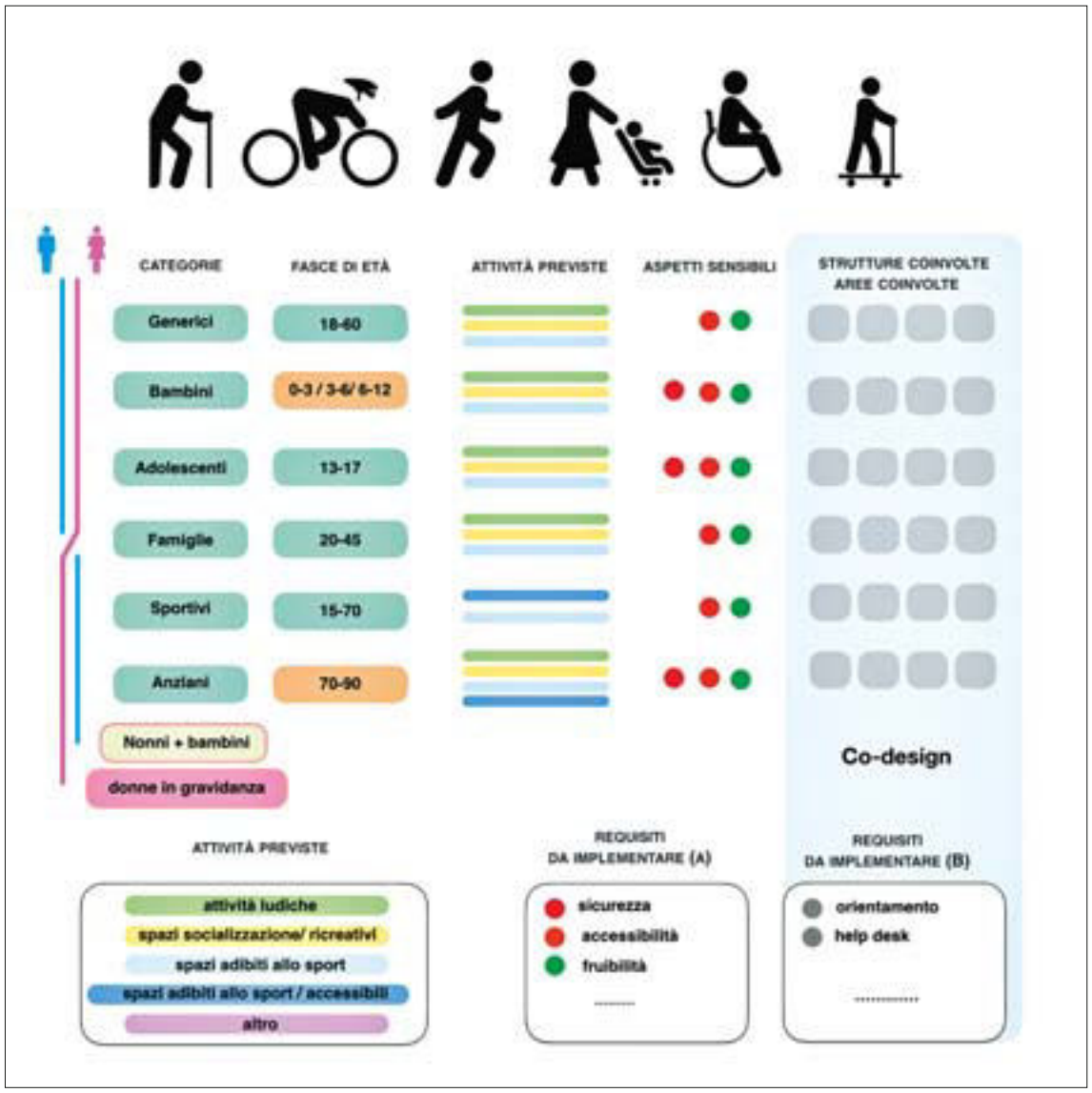
Leisure, socialization and physical activity represent in particular an important means of sharing emotions and information, which allows to increase people's psycho-physical well-being and to promote cohesion and social inclusion [5] and fall within among the key determinants to be followed to guarantee the health of the population for a long time (EuroHealthNet Healthy Aging).

In particular, the practice of physical activity at all ages, according to the WHO, is one of the main instruments of health protection, able to prevent chronic diseases and to combat the conditions of fragility and self-sufficiency.

Strategies to promote physical activity, require integrated interventions that include not only leisure facilities, but also transport planning, traffic control, the design of buildings and urban environments that foster an active lifestyle for all [6].

Specifically, the research team investigated and defined the technical requirements and strategies for the design of a welcoming and accessible urban environment, which favored real and physical interactions between individuals, as a vehicle for maintaining and promoting health.

In particular, the research activity was addressed to the following determining factors:



– walkability, making the area friendly and walkable, without physical barriers that prevent physical activity, and in safe conditions with respect to vehicular traffic, with easy access to recreational facilities and services in the area;
– physical activity and recreation for all, including the elderly, children and the disabled;
– orientation (wayfinding) and smart communication even with the PA (public hearings service). To send and share information, requests, emergency signals, to indicate unusual situations such as potholes, uneven sidewalks, broken street lamps, etc.

3. Methodology

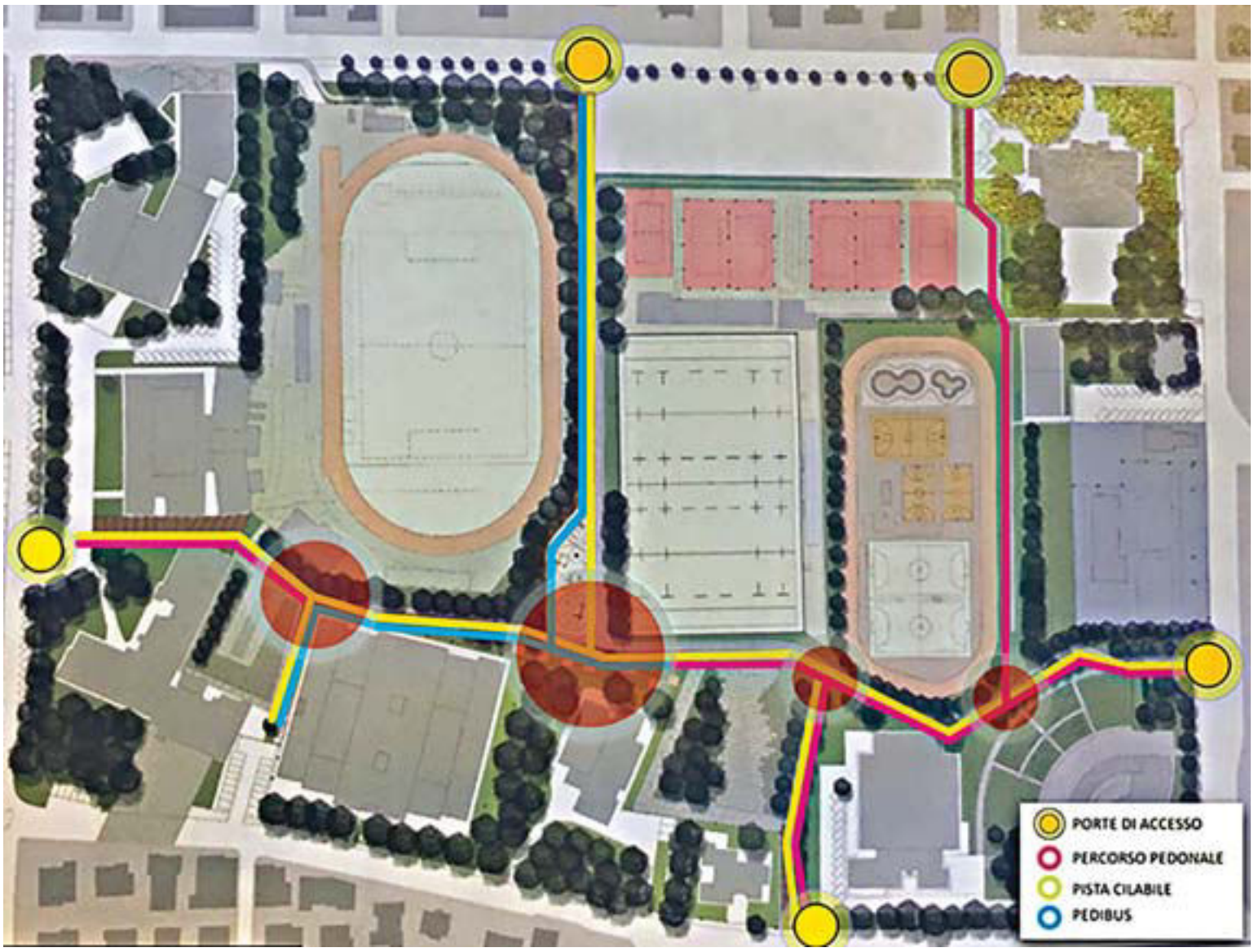
The first phase of the research has included an analysis of the state of the art regarding the current initiatives on urban accessibility, with the aim of identifying the first points of reflection on the methods of design intervention in reference to the following macro-areas: fitness areas and playgrounds, life paths, pedestrian and cycle paths, and pedibus.

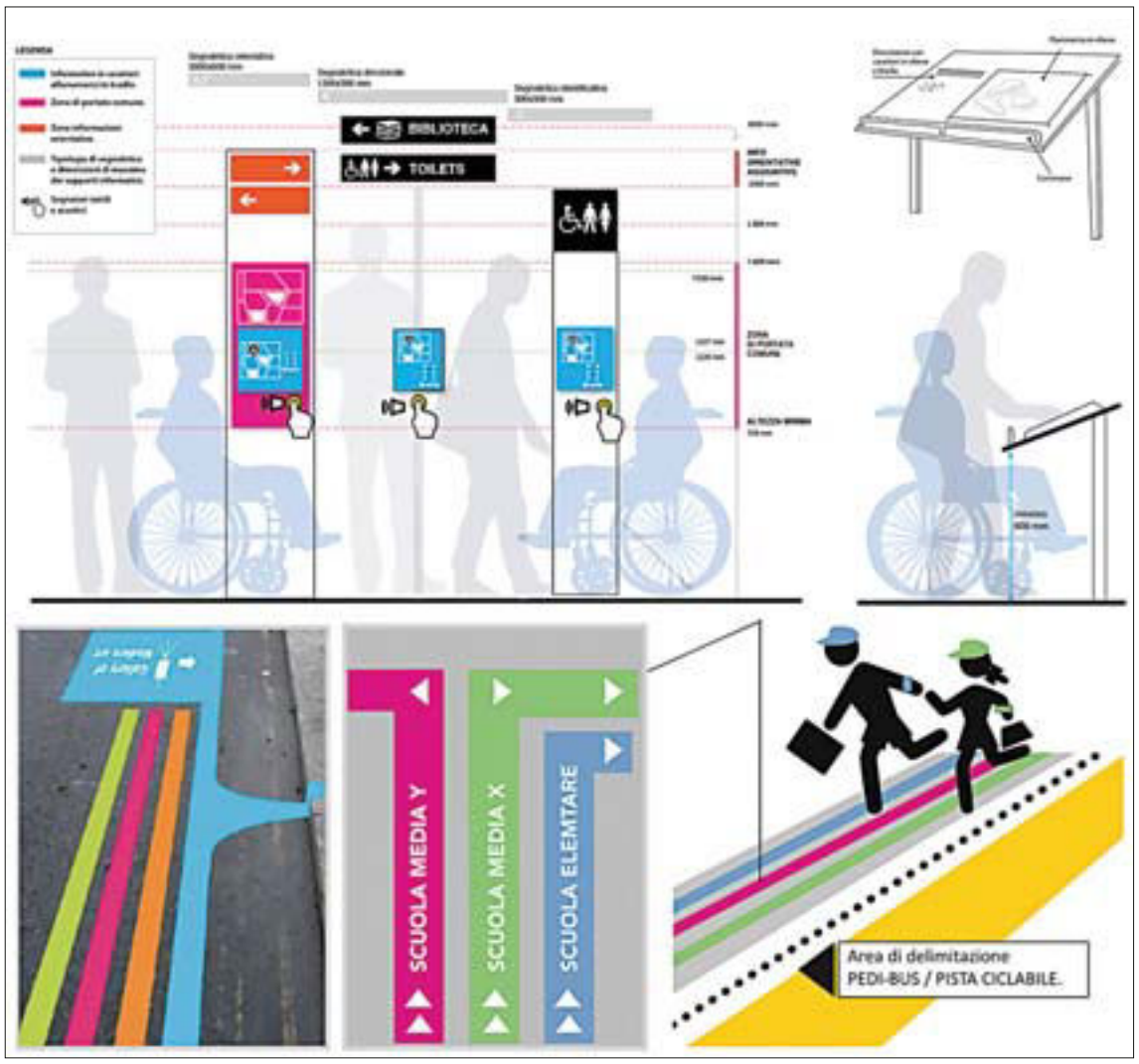
Once the functions of the school village had been identified, it was necessary to plan an intervention characterized by three operational phases. The first phase corresponds to the **Definition of Research Objectives** phase. In the second phase, the definition of the **User needs analysis**; in the third phase, the **development of the Guidelines**.

In particular, in phases 1 and 2 the evaluation methods of the Human-Centred Design and Inclusive Design approaches were used, aimed at assessing the needs and expectations of potential users and, in particular, a:
– The collection and understanding of dimensional and regulatory parameters of interest for equipment, furniture and signage, and subsequent validation of their level of application;
– The collection and classification of needs on the basis of the activities of the final users, and analysis of the aspects that favour socialization and collaboration in the public space;
– The definition of the levels of interaction between user and equipment; between user and environment; between user and other users.

The research used the methodological tools of Human-Centered Design and Inclusive Design to define the design requirements and prescriptions, collected in the form of guidelines. These methods of investigation offer in fact many opportunities for innovation in the perspective of a design for the user experience, and have been used to identify the criticality of the context of use, in relation to the interaction with different types of users, and design requirements [7-8].

In particular, the methodologies applied in the User Needs Analysis phase were: i) focus groups; ii) analysis of activities; iii) participatory design activities. These methods were applied to investigate the needs and expectations of users, with respect to the area





of interest, as well as to identify critical aspects in terms of accessibility, usability and safety with respect to the preliminary design of the area (Fig.1).

The results of the User Needs Analysis have been elaborated in order to put in place the project guidelines. Through the participatory planning sessions, which involved the project partners and stakeholders of the Municipality of Cecina, aspects related to the User Experience were also evaluated, such as: time, motivation, independence and safety. These aspects were evaluated during the presentation to the citizens of the preliminary Masterplan developed by the Epsus study (Fig.3) and of some project scenarios. In particular, the object of the participatory design sessions were: signage and routes, the play area and fitness area, life paths, street furniture and services for mobility and safety.

Once the guidelines were defined, the executive project was developed.

4. Results

The school village "Allenamente" has been designed as a place where all users can enjoy the space through accessible paths and services aimed at the use and active participation of the initiatives within the area.

The area is characterized by green areas that contain equipped platforms, such as the play area, fitness area and life paths, as well as sports facilities and schools. The functions are linked by cycle-pedestrian paths. The routes are accessible with respect to the regulations on accessibility, both as regards compliance with Presidential Decree 503/96 (e.g. slopes that must be less than 5% on the ramps connecting the stretches on the flat), and through the inclusion of horizontal and vertical signs designed and built to increase the use and mobility in key for all (motor, cognitive, perceptual disabilities).

With reference to action 1) Elaboration of Guidelines for accessibility for all, urban ergonomics, way finding for all, for the citadel of sport (D.R. n. 3197 of 10.07.2015, Annex A, Line of action 9.6.6 a.1) - Social functions a wayfinding pilot project has been developed, characterised by ancillary works, such as fixed signs integrated with digital panels, *LVE - Loges Vet Evolution* system for the blind, parking stations for the bike sharing service and first aid stations with semi-automatic defibrillator [9-10].

Within the wayfinding project, a pedibus route has been inserted, accompanied by road signs with special colour codes or pictograms (each school has a specific colour code). In addition, to increase safety and to prevent school dropouts, identification gadgets have been developed integrated with the signs (caps, pins to be applied to the folder).

With reference to action 2) Elaboration of guidelines for accessibility to sports functions for the elderly, disabled and children; activities to support the design of life paths for users from 6 to 99 years (D.R. n. 3197 of 10.07.2015, Annex A, Line of action 9.6.6 a.2 - Sports functions), the project intervention was oriented to the development of a large fitness area where, until 99 years old, everyone can practice physical activity to keep fit or young. A large area where the pleasure of doing fitness can also become an opportunity for socialization between peers or between generations. An outdoor fitness area both for those who already do programmed exercise and for those who want to do it simply by passing by. The individual products have been installed next to each other to allow the various users to interact, thus promoting "social fitness". The overall objective of the project was to offer people easy and free access to exercise to strengthen their motor skills and manual ability, while also enhancing mental well-being. For these reasons, particular attention was paid to elements such as signage and new technologies (QR code and APP). In order to meet the accessibility requirements, particular attention was also paid to the choice of flooring for both the areas and the routes, so that it can also be used by people using the wheelchair. In addition, the tools are characterized by colors suitable for and braille systems to allow the use of the tools even for visually impaired and blind users. Finally, to motivate and include a greater number of users to perform motor activities, areas have also been developed dedicated to collective holistic disciplines (yoga, pilates, etc..). Participatory design activities with citizens have shown that this type of physical activity is appreciated mainly because it allows effective contact with nature and the environment and can be practiced at all ages even in a joint mode.

Another area analyzed was the play area. This action was developed starting from the awareness of having to overcome the concept of disability itself and to promote a different recreational dimension, through the choice of games that: enhance the child's residual abilities; encourage socialization and collaboration between children with and without disabilities; allow parents to relate with children, even in the presence of disabilities of the former.

The research objectives have been formulated through the revision of the literature and the regulations of the sector. In detail, the following European and American safety standards relating to public environments of playgrounds, equipment [11-15] have been analyzed. The following Me2 recommendations and guidelines were analysed internationally for the development of the play area guidelines: 7 Principles of Inclusive Playground Design™ [16 , 18], Inclusive play design guide by Playworld's [19], Let's play Toolkit [20] and Public playground Safety Handbook [21]. The recommendations and guidelines analyzed led to the development of a document of design requirements useful for the selection of games and equipment in the play area.

From the analysis of the state of the art and the current legislation it emerges that the attention to the needs of the child have been somehow reformulated. First of all, we begin to introduce measures aimed not only at the sphere of physical mobility, but also at the sensory and social needs of the community [22]. Another aspect that was found is related to the parental dimension of the games in this case have been developed taking into account the needs of the parent and family members who have to relate to their child(s) or grandchild(s).

The play area is characterized by three macro-areas, each of which is characterized by games that can respond to the needs of children in relation to their age and have varying degrees of difficulty.

On some of the equipment QR codes have been placed through which parents and children can access a world of augmented reality, adding to the playground a further dimension of characters and stories with the possibility for parents and teachers to make listen to the narratives or to study specific challenges for their children.

5. Conclusion

The approach adopted in this work provided a reliable strategy for making the right ethical choices during the design phase, taking into account human diversity, social inclusion and equality. To assess product requirements and user skills, usage tests, focus groups, interviews and analysis of accessibility standards, disability descriptors by the ICF and task analysis were used. The proposed methodology provided immediate feedback and reliable information on the level of inclusion with respect to equipment, furniture and services. In addition, it was also useful to assess personal and environmental factors of interest and to identify design requirements (regulatory and procedural). In particular, the methodology presented will be further validated in similar experiments as an evaluation tool for the verification of the executive design. ■

[1] The research project was developed by:
– Laboratory of Ergonomics & Design, Department of Architecture, University of Florence: Francesca Tosi (scientific director), Alessandra Rinaldi (coordination: Phase 2 - Sports functions; Phase 3 - Culture and entertainment - Phase 5 - Intelligent public lighting), Alessia Brischetto (coordination: Phase 4 - Urban mobility; Phase 6 - GAMES for ALL)
– EPSUS: Franco Landini, Luigi Pingitore, Urban evaluation and development of the Masterplan.

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1. P. 32. State of the art relating to the roads within the school village before the redevelopment intervention
2. P. 33. Exploration phase strategy User Needs Analysis.
3. P. 34. Master Plan Concept developed by EPSUS: arch. Franco Landini, arch. Luigi Pingitore (April 2017); Preliminary analysis of UNIFI routes and signs (in yellow the access points: area map, points of interest, event services; in red the sensitive areas: in these points, conditions of disorientation or confusion could occur).
4. P. 34. Preliminary design of the information panels and of the pedibus route.
5. P. 35. Fitness area.
6. P. 36. Ludic area.

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